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1 import matplotlib.pyplot as plt
2 import numpy as np
3 import pandas as pd
4 from sklearn import preprocessing
5 from sklearn.cluster import KMeans
6 from sklearn.datasets import load_iris
7 from sklearn.mixture import GaussianMixture
8
9 iris = load_iris()
10 df = pd.DataFrame(iris['data'], columns = iris['feature_names'])
11 df['target'] = iris['target']
12
13 X = df.iloc[:, :-1]
14 y = df['target']
15
16 from sklearn import preprocessing
17
18 scaler = preprocessing.StandardScaler()
19
20 scaler.fit(X)
21 X_scaled_array = scaler.transform(X)
22 X_scaled = pd.DataFrame(X_scaled_array, columns = X.columns)
23
24 plt.figure(figsize=(14,7))
25 colormap = np.array(['red', 'green', 'blue'])
26 plt.subplot(1,3,1)
27 plt.scatter(X_scaled['petal length (cm)'], X_scaled['petal width (cm)'], c=colormap[y], s=40)
28 plt.title('Real')
29
30 plt.subplot(1,3,2)
31 model = KMeans(n_clusters=3, random_state=0)
32 pred_y = model.fit_predict(X)
33 pred_y = np.choose(pred_y, [1,0,2]).astype(np.int64)
34 plt.scatter(X_scaled['petal length (cm)'], X_scaled['petal width (cm)'], c=colormap[pred_y], s=40)
35 plt.title('KMeans')
36
37 # GaussianMixture(n_components=3, max_iter=200)

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36 gmm = GaussianMixture(n_components=3, max_iter = 200)
37 y_cluster_gmm = gmm.fit_predict(X_scaled)
38 y_cluster_gmm = np.choose(y_cluster_gmm, [2,0,1]).astype(np.int64)
39 plt.subplot(1,3,3)
40
41 plt.scatter(X['petal length (cm)'], X['petal width (cm)'], c = colormap[y_cluster_gmm],s=40)
42 plt.title('GMM classification')
43

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Text(0.5, 1.0, 'GMM classification')

